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ORNITHOLOGY.—*The hawks of the genus* Chondrohierax.[1] HERBERT FRIEDMANN, U. S. National Museum.

The hook-billed kites of the genus *Chondrohierax* have always been a source of much confusion to taxonomists because of their unusual range of variation in color and size and because of their scarcity in collections. Recently while working over these birds, I

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took the opportunity of bringing together by far the most extensive series of specimens ever assembled and am greatly indebted to the following institutions and their staffs for the loan of material: The American Museum of Natural History, New York (Mr. J. T. Zimmer); the Museum of Comparative Zoology, Cambridge (Mr. J. L. Peters); The Academy of Natural Sciences, Philadelphia (Dr. W. Stone and Mr. M. A. Carriker); the Carnegie Museum, Pittsburgh (Mr. W. E. C. Todd); the University of Michigan Museum, Ann Arbor (Dr. J. Van Tyne); and the California Institute of Technology (Mr. A. J. van Rossem). The specimens assembled total 100 in number; in addition to these Dr. Percy R. Lowe has kindly sent me measurements and geographical data concerning 10 specimens in the British Museum.

If we take Peters' Check List of the Birds of the World (vol. 1: 200. 1931) as a statement of current treatment of the genus, we find three species with no races: *uncinatus*, *megarhynchus*, and *wilsonii*. The last one, restricted to Cuba, is easily disposed of. It is readily told by its yellowish upper mandible. The real problems deal with *uncinatus* and *megarhynchus*. On glancing through the literature, we find that no two authorities give the same range for *megarhynchus*, which is said to differ from *uncinatus* only in having a larger bill. This immediately aroused suspicion as to the validity of the race and was the chief reason for gathering together specimens from all parts of the ranges of the two (tropical Mexico to Bolivia and northern Argentina). However, before it was possible to approach the geographic variations in these birds, obviously conspecific and not, as often stated, distinct species, it was necessary to work out their exceedingly complicated and puzzling plumage sequence. The following detailed description of the plumages of *uncinatus* reveals varieties within phases, certainly a most unusual degree of variability. There are only two real steps in the sequence—juvenal and adult, but both are complex.

PLUMAGES OF C. UNCINATUS UNCINATUS

Adult male

a. Gray phase.—Above dark plumbeous, or plumbeous-black, becoming fuscous, or fuscous-black in worn plumage; the occiput with much basal white and the upper tail coverts tipped and banded with white. Sides of face, ear coverts, and chin deep to dark plumbeous; under tail coverts white to ochraceous-buff, uniform, or with traces of grayish bars occasionally distinctly banded with plumbeous. Remainder of under parts deep plumbeous (usually paler than the upperparts) barred with narrow bands of white, buff, or cinnamon-buff, which are variable in width, and are usually nar-

rowly bordered by fuscous or fuscous-black. Axillaries and under wing coverts uniform deep plumbeous, barred with white or buff; primaries banded (about equally) with white and plumbeous-black below, dark plumbeous and plumbeous-black above, the outer webs often uniform plumbeous-black; secondaries uniform dark plumbeous, occasionally with traces of lighter bars below. Tail plumbeous-black to black, white basally, narrowly tipped with white or deep mouse-gray, and crossed by two bands (the anterior one the narrower) of white, or pinkish-buff, shading to deep mouse-gray posteriorly and towards the outer webs, which are often uniform mouse-gray above. Bill black, olive below; iris greenish white; feet orange-yellow, claws black.

Unbarred variety.—Similar to the above description, but lacking entirely or partially the white barring on the under parts.

Cinnamon-barred variety.—Similar to the above description, but with the gray barring of the under parts more or less replaced by cinnamon-brown or russet, and with more or less indication of a cinnamon or ochraceous-tawny nuchal collar.

b. Melanistic phase.—Entire plumage deep fuscous black, with a slight bronze-purple-green gloss; the occiput with much basal white; tail narrowly tipped with white, and crossed by a single broad white band. Bill black above, dirty olive below, tipped with black; cere and eyelids yellowish green; skin in front of eye blue-green, spot above inner angle of eye orange-yellow; iris white; feet gamboge.

Adult female.

a. Brown phase.—Forehead, auriculars, and sometimes the chin deep gull-gray to deep neutral gray, or dark plumbeous; crown and occiput fuscous to fuscous-black, with concealed white bases; a broad, continuous nuchal collar of ochraceous-buff, tawny, or amber-brown occasionally extending to the ear coverts; remainder of upper parts fuscous to fuscous-black, darker anteriorly, often with slightly paler (sometimes russet) edges to the feathers; upper tail coverts tipped and barred with white or pale gray. Entire under parts, including under wing coverts, white, or ochraceous-white (more ochraceous on the under tail coverts,) with broad nearly equal transverse bars of ochraceous-tawny, cinnamon-brown, russet, or amber-brown, narrowly edged with fuscous or fuscous-black (occasionally this edging is absent, and sometimes it widens to spread over almost the entire bar). Outer primaries pale fuscous above, white, or pale mouse-gray below, cream color, or pinkish buff toward the bases of the inner webs, and distantly banded with fuscous, or fuscous-black (the bands being about one half or one third the width of the lighter interspaces); inner primaries chestnut, or russet, shading to creamy or pinkish buff towards the bases of their inner webs, and distantly banded with fuscous; secondaries light fuscous above, gull-gray below, white, or cream color toward the bases of the inner webs, and somewhat indistinctly banded with dark fuscous. Tail fuscous-black, to black, white basally, narrowly tipped with white or paler hair-brown, and crossed by two bands of hair-brown or mouse-gray, shading to white or pinkish buff on the inner webs, especially anteriorly. Bill black, yellowish olive below; lores olive-orange; sides of cere olive-yellow; spot above eye orange; skin in front of eye grass-green; iris white; feet gamboge.

Gray-backed variety.—Like the above, but with the upper parts plumbeous-black to sooty-black, and with a tendency toward loss of the tawny nuchal

collar. Females in this plumage variation are very like the cinnamon-barred variation of the gray phase of the male.

b. Melanistic phase.—Similar to that of the male.

Immature.

No definite immature plumage; there is a gradual, and probably prolonged molt from juvenal to adult, which appears to commence anteriorly, as well as on the underparts, and to end with the tail.

Juvenal (sexes alike).

a. Light phase.—Forehead, crown, and occiput fuscous-black with white bases to the feathers; a broad, white, cream, or pinkish-buff, nuchal collar, continuous with the white under parts; remainder of upper parts fuscous (shading to fuscous-black on the neck) with narrow cinnamon-tawny or russet margins to the feathers; upper tail coverts tipped and barred with white, or pinkish buff. Entire under parts white, or buff, shading to pinkish buff on the thighs and under tail coverts and either uniform, or distantly barred with hair brown, olive-brown, or fuscous (the number and width of these bars varies considerably); outer primaries fuscous above, creamy white towards the bases of the inner webs, and pallid neutral-gray below, barred with fuscous-black; inner primaries with more or less orange-cinnamon to cinnamon-rufous on both webs; secondaries fuscous above, with some white, or buff, on the inner webs, mouse-gray below, and barred with darker fuscous. Tail fuscous-black, basally white, narrowly tipped with white, cream, buff, or pinkish cinnamon, and crossed with three, or four pale bands, which are uniform hair-brown to light fuscous, on the central pair, and irregularly marked with white, cream, buff, or pinkish cinnamon on the remainder.

b. Melanistic phase.—Forehead, crown, and occiput fuscous-black to sooty black; remainder of upper parts fuscous to fuscous-black, the feathers with concealed white bars or spots near their bases; upper tail coverts tipped and widely barred with white. Entire under parts fuscous to fuscous-black, with concealed white bars on the bases of the feathers, the under tail coverts tipped also with white, or buff; wings fuscous-black crossed by three or four paler bars which are white basally, fuscous above, pale neutral gray below distally. Tail fuscous-black to sooty black, white basally, tipped with white, and crossed by two bands of white, shaded, or marked (especially on the distal band) with hair-brown or mouse gray (that is, the tail pattern like that of the non-melanistic adult).

THE HOOK-BILLED KITES OF GRENADA

The specimens of *uncinatus* from the island of Grenada prove to be constantly smaller than those of the South American mainland or from Trinidad and to have certain color differences as indicated below. For this distinct race I propose the name

Chondrohierax uncinatus mirus subsp. nov.

Type: Adult male, American Museum Nat. Hist., 45054, collected on March 26, 1885, at Morne Rouge, Grenada, by J. Grant Wells.

Subspecific characters.

Adult male.—Similar to the cinnamon-barred variety of the gray phase of *C. u. uncinatus*, but smaller, and with nuchal collar well developed, cinnamon-buff to ochraceous-buff, and the barring on the under parts ochrac-

eous-tawny to tawny, with little or no grayish edgings to the bars. Iris pale green; bill and feet (in dried skins) like those of *C. u. uncinatus*.

Adult female.—Similar to the brown phase of *C. u. uncinatus*, but smaller and differing in the following respects: top of head deep fuscous, with little or no indication of gray; nuchal collar, extending to the ear coverts and cheeks, ochraceous-buff to ochraceous-tawny; upper parts fairly widely edged with tawny or cinnamon-rufous; barring on under parts more ochraceous-tawny to tawny, and with little or no indication of brown edgings.

Immature and *Juvenal.*—Not known.

Adult male (one specimen (type)).—Wing 250; tail 165; culmen from base of cere 28.0; tarsus 30.0; middle toe without claw, 25 mm.

Adult female (three specimens—one sexed "male," another not sexed, but undoubtedly female).—Wing 262–266 (264.3); tail 179–183 (181.3); culmen 30.0–30.5 (30.3); tarsus 30.0–36.0 32.3; middle toe without claw 29.0–34.0 (31.0).

Range: The island of Grenada, where resident.

It is said by observers who have worked in Grenada that the birds there never attain the wholly gray phase found in South America, so that it seems that the island form is a case of arrested plumage development with a tendency to hen feathering in the males (the cinnamon bars of the underparts being essentially a female character in these birds). It is noteworthy that in specimens from Trinidad and Venezuela we find suggestions of hen feathering in males (the cinnamon-barred variety of the gray phase described in the account of the plumage sequence of typical *uncinatus*). In Grenada it has apparently become fixed.

Just as we find a tendency towards hen feathering in the males in this species so too we find signs of cock feathering in the hens in some instances. The gray-back phase of the adult female (represented by specimens from Surinam and Venezuela) is apparently to be so considered.

THE HOOK-BILLED KITES OF MEXICO

Examination of a good series of Mexican specimens reveals the fact that at least two subspecies of the hook-billed kite occur in that country. The birds inhabiting Tamaulipas, Jalapa, Guanajuato, and Jalisco are a very distinct race and may be known as

Chondrohierax uncinatus aquilonis subsp. nov.

Type.—Museum of Comparative Zoology 113711, adult male, collected in Tamaulipas, Mexico, April 9, 1900 (ex Worthen coll.).

Subspecific Characters.—Males very much darker, especially on the underparts, than *uncinatus*, blackish plumbeous instead of deep plumbeous, the white ventral bars broader than in topotypical *uncinatus*; females similar to the darker barred brown phase of typical *uncinatus* (the ventral bars russet or amber brown).

Measurements.—5 males—wing 279–300 (290), tail 186–210 (199), culmen from cere 29–33.5 (31.1) mm; 4 females—wing 275-300 (291.5), tail 191–214 (204.5), culmen from cere 30.5–33 (32.3) mm.

Range.—Tamaulipas, Jalapa, Guanajuato, and Jalisco. It is possible that

two very large birds from Guerrero are of this race, but the only male is in the melanistic phase and cannot be identified subspecifically. I consider them, together with Oaxaca, Quintana Roo, Chiapas, and Guatemalan birds as typical *uncinatus*.

THE UNCINATUS-MEGARHYNCHUS PROBLEM

The form *megarhynchus* was described by Des Murs in Castelnau's *Voyages*, volume 1, Oiseaux, 1855, page 9, plate 1, from Sarayacu, somewhere near the eastern part of the Ecuadorean-Peruvian border. The type locality of *uncinatus* is "Vicinity of Rio to the north of Brazil and all of Guiana." If we measure the culmen from the cere in the plate given by Des Murs, we find it to be 39 mm. The bird is, by plumage, a male. Now, if we take our series of adult *uncinatus* and tabulate their dimensions, we find two things, First, an enormous range of variation; second, no correlation between variation and geography.

Adult male (26 specimens): Wing 265–301 (285.8); tail 173–210 (191.1); culmen from cere 27.0–35.5 (31.3), one 42.0; tarsus 32.0–37.0 (35.1); middle toe without claw 28.0–35.0 (31.1).

Adult female (31 specimens): Wing 268–321 (289.4); tail 191–228 (202.8); culmen from cere 28.0–37.0 (31.6), one 43.5; tarsus 31.0–37.0 (33.8); one 28; middle toe, without claw 28.0–34.0 (30.9).

These measurements arranged geographically are presented in the tables on the following page.

At first glance we may see that birds from eastern Brazil (Bahia, within the original, vague type locality of *uncinatus*), from the Amazon, from Mexico (Chiapas, and Guerrero) and from western Ecuador all match the characters of *megarhynchus*. In other words, "*megarhynchus*" occurs here and there throughout the range of *uncinatus;* furthermore, there is no gap in the size variations between small *uncinatus* and large "*megarhynchus*." This continuity of variation and absence of geographical correlation point to but one conclusion: that *megarhynchus* cannot be regarded as a taxonomic entity in any way distinct from *uncinatus*. The problem, however, is not quite as simple as a bald statement of it implies. One specimen from Ambata Oriente, eastern Ecuador, and four from northeastern Peru (Cajamarca to Rio Huallaga) regions from which *uncinatus* has not been recorded, are so very much larger, in bill length, and also to some extent in the greater width of the rectrices that I cannot put them in with the merged *uncinatus-megarhynchus* series. These birds, which are described below, are apparently the climax in size of the whole species, and it appears that the birds from Ecuador, the Andes of Venezuela, eastern Brazil, and southern Mexico, that have appeared in literature as *megarhynchus* are variants of *uncinatus* in the direction of the Ambata-Peruvian birds. This race may be known as

Chondrohierax uncinatus immanis subsp. nov.

Type.—Museum of Comparative Zoology 149835, adult unsexed (female by plumage), collected at Ambata Oriente, on the eastern base of the eastern Andes, Ecuador, by Reinberg.

TABLE 1.—MEASUREMENTS OF 26 MALE SPECIMENS OF CHONDROHIERAX UNCINATUS UNCINATUS

Country	Number of Specimens	Wing	Culmen from Cere
Mexico (Guerrero)	1	301	42
Guatemala	3	281–299 (287.5)	30.0–33.0 (31.2)
Nicaragua	1	290	33.0
Panama	1	299	30.5
Venezuela	5	265–294 (280.4)	29.0–30.5 (29.8)
Surinam	3	272–291 (283.0)	28.5–30.5 (29.7)
Colombia	2	278–292	30.5–34.0
Ecuador	5	274–289 (284.3)	32.5–35.5 (34.3)
Peru	2	286–298	33.0–33.5
Brazil	2	275–285	27.0–29.5
Argentina	1	300	30.0

TABLE 2.—MEASUREMENTS OF 31 FEMALE SPECIMENS OF C. UNCINATUS

Country	Number of Specimens	Wing	Culmen from Cere
Mexico (Guerrero)	2	283–307	30.0–43.5
Guatemala	1	289	29.5
Nicaragua	1	290	32.5
Costa Rica	1	290	30.0
Venezuela	6	272–309 (287.8)	29.0–31.5 (29.9)
Surinam	2	285–289	28.0–30.5
Colombia	10	268–321 (285.0)	28.0–34.5 (31.4)
Ecuador	4	284–303 (290.8)	28.5–38.0 (33.6)
Peru	2	290–305	34.0–34.5
Brazil	2	293–295	30.0–37.0

TABLE 3.—MEASUREMENTS OF 10 SPECIMENS OF C. U. UNCINATUS SUPPLIED BY DR. P. R. LOWE

Locality	Sex	Wing	Tail	Culmen from Cere	Tarsus
Amazon	Unsexed	295	187	38	36
Brazil, Bahia	"	285 (worn)	194	40	37
Venezuela, Merida	"	289	200	31	34
" "	Male	297	205	31	38
Mexico, Chiapas, Tonala	Male	317	210	38	40
" Colotlan	Male	291	205	30	35
" Chiapas, Tonala	Female	308	213	34	36
" "	Female	305	217	36	39
" "	Female	296	205	35	37
" Oaxaca	Female juv.	292	218	36	36

Subspecific Characters.—Distinguished from *uncinatus* by its huge bill and broad rectrices; wing 317, tail 228, culmen from cere 50 mm.

Adult male.—(2 specimens, Shapaja on the Rio Huallaga, and Chaupe, Cajamarca Province): Wing 315, 319; tail 205, 228; culmen from cere 45, 50 mm.

Adult female.—(3 specimens including the type; Ambata Oriente, Ecuador; Chaupe, Cajamarca Province and Rio Jelashte, San Martin, Peru): Wing 306, 314, 317; tail 225, 228, 229; culmen from cere 48, 50, 50 mm.

Range.—Ambata Oriente, Ecuador, to northeastern Peru (Shapaja, Rio Huallaga; Rio Jelashte, San Martin; and Chaupe Cajamarca).

Remarks.—It may seem strange to describe as new a form from a place not far from the type locaity of *megarhynchus* (which is here relegated to the synonymy of *uncinatus*) but, as is shown above, "*megarhynchus*" has no discrete range or dimensional limits outside the variational range of typical *uncinatus*. By describing *immanis*, *megarhynchus* is caused to assume its correct place as an intermediate between *uncinatus* and *immanis*, as it should be on geographic grounds. The "*megarhynchus*" type of individuals from Mexico, Venezuela, and eastern Brazil, cannot, of course, be said to be intermediates between *uncinatus* and the geographically remote *immanis*, but they are variants in the direction of the latter.

VARIATIONS, TYPE LOCALITY, AND RANGE OF C. U. UNCINATUS

Males in the gray phase vary slightly from north to south in the width of the white ventral bars, the bars becoming narrower on the average in Peru, the Guianas, Brazil, and Argentina, and broader in Central America, but the difference is very slight. Peruvian males (2) are a little darker gray on the underparts than specimens from other South American countries, but again the difference is a faint one.

As stated above, the locality given by Temminck in the original description of this bird is very broad—from Rio de Janeiro to all of the Guianas. This has never been restricted as far as I know; I hereby restrict it to the vicinity of Paramaribo, Surinam.

The range of the nominate form of the hook-billed kite is as follows: marshy and swampy places in the tropical zone from southern Mexico (Guerrero, Oaxaca, Yucatan, and Chiapas) south through Guatemala, Nicaragua, Salvador, Costa Rica and Panama to Colombia, Venezuela, the Guianas, Brazil, western Ecuador, western, central, and southeastern Peru to Bolivia (Santa Cruz de la Sierra), northwestern Argentina (Embarcación and Tucumán), Paraguay (Fort Wheeler) and southeastern Brazil (São Paulo).

KEY TO THE SPECIES AND SUBSPECIES OF CHONDROHIERAX

a. Upper mandible pale yellowish white, inclining to bluish horn at the base; feathers of upper parts with concealed white bars on their bases (Cuba) ..... *C. wilsonii*

aa. Upper mandible black; no concealed white bars on the feathers of the upper parts.

b. Size larger; wing 265–301 mm., in males; 268–321 mm. in females.

c. Bill smaller; culmen from cere less than 45 mm.

d. Plumage gray or dark gray, barred beneath with gray or dark gray and white.

e. Ground color of under parts dark blackish plumbeous, white bars wide (about 5 mm.).....*C. u. aquilonis* ad. ♂

ee. Ground color of under parts paler, deep plumbeous; white bars narrow (1.5–3 mm.).....*C. u. uncinatus* ad. ♂

dd. Plumage dark brown or blackish brown above, barred beneath with brown on white ground color or almost unbarred white.

e. Under parts heavily barred.....*C. u. uncinatus* ad. ♀
C. u. aquilonis ad. ♀

ee. Under parts nearly unbarred white.....*C. u. uncinatus* juv.
C. u. aquilonis juv.

cc. Bill very large, culmen 50 mm.....*C. u. immanis* ad. ♀

bb. Size smaller; wing 250 mm., in male; 262–266 mm.
In females (Grenada).....*C. u. mirus.*

I am much indebted to Mr. W. W. Bowen for assistance in compiling measurements and in working out the plumages of these birds. Dr. J. Van Tyne and Mr. L. Griscom also aided by sending notes and opinions about plumages and variations.

MALACOLOGY.—*New Philippine land shells of the genus* Obba.[1]

Paul Bartsch, U. S. National Museum.

A sending of Obbas to the U. S. National Museum for determination by Mr. Walter F. Webb of Rochester, New York, has brought to light a number of new races, which are here described.

The mass of Philippine material before me belonging to the genus *Obba,* makes it possible to regroup some of the named forms in a more natural arrangement. Mr. Webb's recent sending makes it necessary to give consideration to the mollusks which were described by von Möllendorff (Nachrichtsblatt der Deutschen Malakozoologischen Gesellschaft **20**: 87–88) as

Obbina lasallei Eydoux
Obbina lasallei forma *subcarinata* Mlldff.
Obbina lasallei forma *subcostata* Mlldff.
Obbina lasallei var. *obscura* Mlldff.

[1] Published by permission of the Secretary of the Smithsonian Institution. Received April 6, 1934.